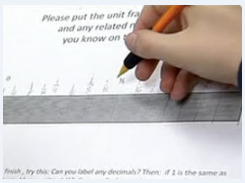
DOINGWHATWORKS

VIDEO
4:32 min

Full Details and Transcript



Fractions on a Number Line

Eliza Hart Spalding School of Math and Technology, Idaho

January 2011

Topic DEVELOPING EFFECTIVE FRACTIONS INSTRUCTION FOR K-8

Practice FRACTIONS AS NUMBERS

Highlights

- Fourth-grade teacher Vonda Franklin presents a lesson designed to have students understand that fractions are numbers.
- She discusses the challenge of having students understand that fractions are numbers on a number line, going beyond the part-whole concept.
- Students are working with equivalents based on unit fractions as well as the decimal and percentage equivalents.
- She describes how she will use measurement activities to address misconceptions about fractions.

About the Site Eliza Hart Spalding School of Math and Technology Boise, Idaho

Demographics

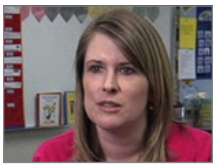
- 85% White
- 8% Native American
- 6% Black
- 5% Hispanic

- 3% Asian
- 2% Other
- 18% Free or Reduced-Price Lunch
- 1% English Language Learners
- 6% Special Education

At Eliza Hart Spalding School of Math and Technology, a math and technology magnet, the focus is on developing students' mathematical thinking. Features of the program include the following:

- A learning environment that supports using a variety of strategies in mathematical problem solving, reasoning and proof, and connections;
- Use of models, manipulatives, and visual representations to support fractions instruction; and
- Emphasis on mathematical discourse and communication to explain reasoning.

Full Transcript



00:00 Hi, I am Vonda Franklin. I teach fourth grade at Spalding Elementary in Boise Idaho.

Franklin (to students) So here is our number line. We have at this end zero and all the way on this end we have one.

Franklin **00:18** My goals for this lesson were for them to start to have an idea to go from the enactment stage of actually cutting the fraction blocks to seeing it laid out and to understand that a fourth is half of one-eighth and to start to see that they are numbers and that there are numbers on the number line between zero and one, and beyond, and that those numbers that are on the number line between zero and one are fractions.

Franklin (to students) **00:44** Yesterday we talked about fractions. We talked about what are fractions. What are they?

Student Parts of a whole.

Franklin Parts of a whole.

Franklin 00:59 In today's lesson I asked them several times what is a fraction, and they continually answered fractions are parts, parts of a whole, and they are not making the connection to fractions being numbers even after we put the numbers on the number line. And I asked the question again. One student made the conjecture that sometimes fractions are numbers on a number line and sometimes they are not. And we do have to find the things to pick out to get the kids to find those misconceptions if they are not or find a way of explaining what they are trying to say.

Franklin (to students) 01:32 So the unit fractions that we are looking at are one-fourth, one-eighth, and we'll do one-sixteenth at the very end if we get that far today. Okay? So look at one-fourth, two-fourths, and any related non-unit fractions that go with fourths and eighths.

Franklin 01:50 I did choose to use the fourths, the halves, the eighths, sixteenths today because we had built fraction strips with those same measurements, and I was linking the two of them together. I was building on what they already knew and what they already did and adding that visual model. At the end of our activity, at the bottom of their worksheet, they were asked to fill in the decimal equivalents on the number line and percentages. My goal wasn't that they were able to fill in the one-eighth fractional piece of what that number was, but that they were able to start to see the connection between fractions, decimals, and percents.

Student 02:28 Three-fourths is correct, right?

Student Because this is one-fourth, and then this would be two-fourths—also one-half—and then three-quarters?

Franklin 02:37 I think the misconception that we are battling right now is still that idea of number. That kiddos see an eighth and they see that as larger than a fourth, and we are still battling their idea of number

and how it's changed with fractions. With the misconceptions that the kiddos are having with whole numbers and fractions, we are going to just keep working on them again through measurement. That's going to help when we start dealing with fractional pieces of an inch that they are able to measure out and that they see how many fourths, and how long that is for three-fourths versus one-half. So measurement will be a huge time for us to address some of these misconceptions. We will definitely continue talking about fractions though measurement. And even the ideas, some of the other misconceptions that they had is measuring the chunks of pieces rather than the measurement of the piece. It's not one-fourth until you have actually gone that one-fourth measurement. And so I think as we do measurement activities, that misconception will be addressed as well. I see the light click on with a lot of understanding during that time.

Student 03:48 Now I know what that is.

Franklin What is that?

Student It's one-eighth.

Franklin How do you know?

Student Because this is your one-quarter and this is one-eighth, and this is half of your one-quarter.

Franklin Okay. So we folded it, we cut it, and we're making…?

Student One-eighth.

Franklin One-eighth.

Franklin 04:02 Also, I have a chance to preteach them something that we might be doing the next day, so that when it comes up the next day, they are able to participate because it's not the first time they have heard it. It might be the second or third time, depending on when I've brought it up. And to see them engage in that and feel like they understand it and their participation increases and therefore their understanding of the topic increases.